

OPI DATE 01/08/95 APPLN. ID 58626/94
AOJP DATE 14/09/95 PCT NUMBER PCT/FR94/00054



AUP458626

DEMAI

(CT)

(51) Classification internationale des brevets ⁶ : B42D 15/00, G09F 15/02	A1	(11) Numéro de publication internationale: WO 95/19268 (43) Date de publication internationale: 20 juillet 1995 (20.07.95)
(21) Numéro de la demande internationale: PCT/FR94/00054 (22) Date de dépôt international: 18 janvier 1994 (18.01.94) (71)(72) Déposant et inventeur: GAUTRENEAU, Pierre [FR/FR]; 10, Allée des Comtesses, F-77450 Esbly (FR).	(81) Etats désignés: AU, CA, JP, US, brevet européen (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Publiée <i>Avec rapport de recherche internationale.</i>	

(54) Title: PAPER TYPE OR SIMILAR SHEET SUBSTRATE FOR USE IN PRINTING OR REPRODUCTION PROCESSES

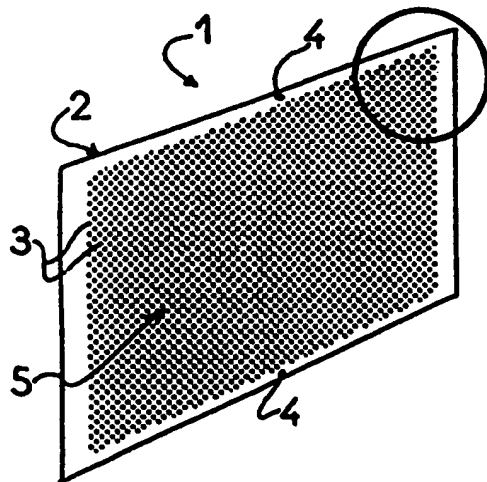
(54) Titre: SUPPORT EN FORME DE FEUILLE GENRE PAPIER OU SIMILAIRE POUR IMPRESSION OU REPRODUCTION

(57) Abstract

The paper type or similar sheet substrate for receiving an image in a printing or reproduction process. Said sheet (2) has a number of uniformly distributed holes (3), providing a paper which is transparent on one side and is capable of being applied to a glass pane. On the outside, the light illuminates the image and limits visibility of the holes; on the inside, the holes let the light through, making the document appear transparent. The transparency effect is advantageously reinforced by the application of a light-absorbing solid black area on the reverse. Depending on the printing or reproduction process used, the perforated sheet (2) can be associated with an unperforated sheet applied to its reverse side, thereby providing a lining sheet for said perforated sheet.

(57) Abrégé

Le support en forme de feuille genre papier ou similaire est destiné à recevoir un visuel par une technique d'impression ou de reproduction. Cette feuille (2) est munie d'une multitude de perforations (3) régulièrement réparties, pour l'obtention d'un papier transparent une face susceptible d'être appliquée sur une vitre par exemple. Côté extérieur, la lumière éclaire le visuel et limite la perception des perforations; côté intérieur, les perforations laissent passer la lumière et le document paraît transparent. Cet aspect de transparence est avantageusement renforcé par l'application d'un à-plat noir sur le verso, permettant l'absorption de la lumière. Selon la technique d'impression ou de reproduction utilisée, la feuille perforée (2) peut être associée à une feuille pleine, appliquée sur son verso et venant la doubler.



PAPER TYPE SHEET-SHAPED SUPPORT OR THE LIKE FOR
PRINTING OR REPRODUCTION

This invention relates to the general fields relating to communication and paper and more particularly a new paper type sheet-shaped support or similar element for receiving information or marking by means of printing or reproduction.

In one document D1 : FR-A 2 525 370, a patent application still not granted, concerning an advertising medium for equipping all glazed surfaces without masking them, especially those of motor vehicles and taxis, there is a description of a medium whose material is printed and then perforated, the method being identical to the one for producing currently sold decorative sun-visors. The examples given do not describe any technical means able to respond to the questions posed, but on the contrary radically differ from the currently known technique in printing sectors.

In the document D2 : DE-A 28 38 028, a method for feeding woven materials into printing machines sheet by sheet, this document solely concerns woven materials. Our invention concerns a paper type medium or the like whose characteristics cannot be assimilated with the woven materials.

These two documents are therefore radically different from the principle of the present invention concerning a paper type sheet-shaped medium for printing or reproduction and formed of a sheet provided with a multitude of regularly distributed perforations



and which provides a non-perforated integral portion constituting means able to have the medium picked up by the printing or reproduction material grasping system so as to obtain a one-face transparent paper able to be used as conventional expendable substance by said materials.

The medium of the invention appears in the form of a paper type sheet or the like fitted with a multitude of regularly distributed perforations. This perforated sheet is intended to receive a display in the form of an informative, decorative or marking document by means of a conventional reproduction (reproduction graphics) or printing (offset, silk screen or other) technique. Once marked on the recto, this medium constitutes a one-face transparent paper able to be fixed onto a window, for example. On the outer side, the recto of this one-side transparent paper is illuminated by the light, the display appears clearly and the perforations are not visible. On the inner side, the perforations allow the light to pass and the document appears approximately transparent. This impression of transparency is advantageously reinforced by providing a coloured flat tint on the verso (preferably black) which enables the light to be absorbed.

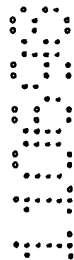
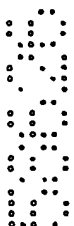
Surprisingly, the impact caused by the perforation technique used provides the paper sheet with greater rigidity and improves its resistance. In addition, the use of this technique significantly limits the influences of a hygrometric variation of the air on the evenness of the paper with respect to conventional full sheets.

This support makes it possible to obtain advertising posters, promotional cards, posters and sun



visors which filter the light and thus no longer mask the clarity of glazed surfaces on the inner side.

5 The perforations of the sheet preferably have a surface area of close to 0.8 mm^2 and are advantageously distributed according to a density of about 20 to 30 per cm^2



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10 The perforations of the sheet preferably have a surface area of close to 0.8 mm^2 and are advantageously distributed according to a density of about 20 to 30 per cm^2 in the form of a regular screen.

15 According to another disposition of the invention, the support comprises a non-perforated peripheral frame which reinforces its structure : this solid frame avoids any ill-timed tearing and any accidental deterioration of the material.

20 According to one particular embodiment, the sheet fitted with perforations comprises a non-perforated portion on at least one of its borders. This non-perforated portion is suitably disposed and has dimensions so that it extracts the sheet with the aid of traditional vacuum means of the printing or reproduction equipment. These suction cups are found on feeders for introducing the sheets of offset machines ; they are used to pick up the sheet intended to be printed and transport it to the grippers to allow printing.

25 According to another disposition of the invention, the perforated paper sheet is associated with a second full sheet which doubles it and which is applied to its rear side. The two sheets have approximately the same dimensions and are rendered integral via at least one

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of their borders by any suitable device, such as a fold line or a line glueing or point glueing.

5 This full sheet is associated with the perforated sheet so as to facilitate or allow in certain cases, depending on the techniques used, the marking of the visual display on the recto of the support. Once the visual display has been transferred by printing or reproduction, the full doubling sheet is removed so as to obtain the one-face transparent paper.

10 As regards offset printing, this doubling sheet enables the support to be transferred by means of suction through the perforations.

15 In silk screen printing, it ensures that the support is kept on the suction table during printing and also ensures the recovery of the ink likely to pass through the perforations. For all these printing machines, the full doubling sheet facilitates the picking up and sliding of the supports with respect to one another at the level of the feeder. It provides the support with a smooth lower surface without which good distribution on a machine would not be obtained. It is to be noted that for the two printing techniques (offset and silk screen), the ink surplus not placed at the location of the perforations tends to become eliminated gradually on passage of the sheets ; in fact, the perforations do not always appear at exactly the same place on the machine.

20
25
30 In reproduction graphic techniques, this full sheet ensures protection of the drum by recovering the inks passing through the perforations and secures them to this sheet at the time of the passage on cooking. In this way, the copiers do not undergo any crushing.



In addition, according to another disposition of the invention, the two superimposed sheets are rendered integral with each other at one of their borders and are bound or retained on the opposing border so that they can slide and move with respect to each other ; this characteristic ensures a perfect rolling of the two sheets on the drum of colour laser type copiers. The « sliding » link may be obtained via an interlacing of upright notches provided on one of the sheets and oblique notches provided on the second.

The invention is even more demonstrated without it being restrictive by the following description of several embodiments given by way of example and shown on the accompanying drawings on which :

- figure 1 is a perspective view of a possible embodiment of the paper support of the invention and intended to receive a marking by means of printing or reproduction ;
- figure 2 is an enlarged view of a portion of this support ;
- figure 3 is a perspective view of another possible embodiment of the support ;
- figure 4 shows another embodiment example of the support and constituted by a perforated sheet associated with a full doubling sheet ;
- figures 5a and 5b show the « sliding » linking means able to be provided to bind one of the sides of the sheets doubling ;
- figure 6 is a side view of the result of this link in winding of the sheets superimposed on a copier drum.

As shown in figure 1, the support 1 of the invention is formed of a paper type sheet 2 or any



other similar « rigid » material. One of the faces of the sheet 2 (recto) is intended to be treated by means of printing or reproduction so as to apply to it any informative, decorative or advertising visual display.

5 This paper sheet can have any type of format : 60x80, 40x60, 30x40 or 30x80, for example. Its paper weight may be between 80 and 150g/m² and shall preferably be more than 100g/m² so as to obtain a good quality one-face transparent paper.

10 The sheet 2 is subjected to a vertical embossing treatment by means of lines of punches so as to form a multitude of perforations 3. The perforation means are advantageously associated with a precise system for managing the running off of the paper material. The

15 punching operation provides special properties of rigidity and resistance to humidity.

The surface of each circular perforation is about between 0.8 and 1 mm². These perforations are disposed by rows offset by one half-step with respect to one

20 another so as to form a regular screen as shown on figure 2. So as to obtain a good quality one-face transparent paper, the perforations 3 are distributed according to a density of between 20 and 30 per cm² and preferably about 25 per cm². The perforations 3

25 normally occupy about ¼ of the surface of the paper.

Figures 1 and 2 show the presence of a frame 4 without any perforations and surrounding the perforated zone 5. This non-perforated frame 4 reinforces the structure of the sheet 2 and limits any ill-timed or accidental tearings linked to the perforations screen and in addition allows for gripping.

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The recto of the sheet 2 preferably has a neutral colour, such as white ; depending on the desired visual



display, it can also be tinted. Its verso is covered with a dark coloured flat tint, preferably black, which permits optimum absorption of the light and which optimises the transparency of this side of the support.

5 Figure 3 shows a support 1 according to the invention and able to be used for an offset printing. This support 1 is formed of a sheet 2 provided with a zone of perforations 5 diagrammatised by the crossed framing, said perforated zone 5 being surrounded by a
10 non-perforated frame 4. On one of its sides, the width a frame 4 is larger. The corresponding portion 6 without any perforations is located inside the zone which corresponds to the location of picking up of the sheet by the suction means of the equipment transfer
15 system.

A perforated sheet of this type can be used for printing. The ink of the printing roller, which is not laid on the support at the level of the perforations, is eliminated during passage of the following sheets as, owing to the size of the spacings of the
20 perforations screen, the holes are not always present at the same place on the machine.

As shown on figure 4, the support 1 of the invention can be formed of a perforated sheet 2 of the
25 same type as the one shown on figure 1 and associated with a full sheet 7 used for doubling and applied to its verso.

The doubling sheet 7 is rendered integral with the perforated sheet 2 so as to be able to be easily removed after transfer of the display. Figure 4 shows the full sheet 7 slightly standing back under the
30 perforated sheet 2. The aim of this representation is to clearly show the structure of the support 1 : in



reality and at the time it is used, the two sheets 2 and 7 are clad onto each other over their entire surface so as to obtain two layers of superimposed materials.

5 The two sheets 2 and 7 have the same dimensions and are rendered integral with each other by at least one of their borders.

10 According to one possible embodiment, they are identical and the support 1 is obtained from a single paper sheet (paper weight : 135g/m^2 for example) folded at its middle. In this case, the means 8 for rendering integral the two sheets 2 and 7 are located on one of their borders and consist of a single fold line. Only one portion of the basic sheet undergoes a perforation treatment and a coloured flat tint is affixed to its

15 verso.

20 In another embodiment, the full doubling sheet 7 can also be directly mounted and rendered integral by glue points or lines on one or several borders of the perforated sheet 2. The doubling 7 can then have a particular nature and in particular a paper weight differing from that of the perforated sheet 2.

25 The perforated sheet/full sheet complex obtained can be used in an offset or silk screen printing machine. For silk screen printing, the doubling 7 makes it possible to recover the ink which would pass through the perforations and it also ensures that the support is maintained on the machine during printing. For these two techniques, the full sheet is also intended to

30 enable the sheets to be transported by means of suction through the perforations. In addition, it provides smoothness for the lower surface of the support which



facilitates its sliding and separation from the stored pile awaiting printing.

The reproduction graphic technique, for certain types of copiers and in particular colour laser copiers, requires that the paper be wound onto one portion of the outer surface of the drum. The obtaining of a quality copy passes through a correct transfer of polarity and a good cooking. However, these characteristics are not easy to obtain for thick supports made up of two superimposed sheets owing to the non-homogeneity of the structure and the need to provide an easily destructible rendering integral system. In fact, if the two sheets are rendered integral via just one of their sides, their weight requires that they be separated on the opposite side. Secondly, if they are rendered integral over their entire periphery, the winding of the paper on the drum results in a curling of the internal sheet.

So as to overcome this drawback and as shown on figures 5a, 5b and 6, the perforated sheet 2 and the doubling sheet 7 are rendered integral on their introduction border 9 by any suitable fold line or glueing device and bind them and retain them on their opposing border 10 so that the two sheets 2 and 7 can slide perfectly with respect to each other. The two superimposed sheets are then permanently clad against each other but can still move with respect to each other which absorbs the bend effects.

Figure 6 shows the position of the sheets complex on a copier drum type roller 11. It also shows the slight movement or offsetting 12 inherent with the bend at the level of the sliding link of the sheets.



This type of link can be obtained by any suitable device and in particular, as shown on figures 5a and 5b, by means of the upright notches 13 on one of the sheets 2 associated with the oblique notches 14 on the second sheet 7. The corresponding cuts are engaged into one another and interlaced by suitable cylindrical-shaped mechanical means fitted with lugs for example.

This type of link may also be obtained by folding down by folding the extremity of one of the two sheets onto the second sheet over its entire width or of both the two sheets or simply by folding down their two opposing corners having the same width by a fold at 45° over a length of between 10 and 20 mm.

As for the silk screen printing technique, the doubling sheet 7 provided on the support used in reproduction graphics makes it possible to recover the inks which passes through the perforations. These inks are secured to doubling at the time of entering cooking and the copier does not undergo any crushing.

The nature of the support, its structure and its format are selected according to the type of printing or reproduction it is desired to use. In all cases, after transfer of the display onto the support, the latter can be applied to any glazed surface so as to become visible from the outside which providing it with transparency on the inside so as to see the outside.

The aim of the reference signs inserted following the technical characteristics mentioned in the claims is to facilitate understanding and do not limit the scope of the invention.

CLAIMS

1. A reproduction or printing support formed of a sheet provided with a multitude of perforations regularly distributed so as to obtain a one-face transparent paper, wherein
5 it includes an integral non-perforated portion forming means for picking up said sheet by a grasping system of said reproduction or printing equipment.

2. A support according claim 1, wherein
10 the sheet provided with perforations includes a non-perforated portion on at least one of its borders, said non-perforated portion having suitable dimensions for picking up said sheet by the vacuum grasping means of
15 the reproduction or printing equipment.

3. A support according to claim 1, wherein it includes a full sheet applied to the verso of the perforated sheet, in that the two sheets are rendered
20 integral with each other at the level of one of their borders, and in that they are bound onto the opposing border so that the two sheets can slide with respect to each other.

4. A support according to claim 3, wherein the sliding link of the sheets is obtained with the aid of upright notches on one of the sheets and oblique notches on the second and which are
25 int rlaced.



5. A support according to any one of claims 1 to 4, wherein the perforations of the sheet have a surface area of close to 0.8 mm² and in that they are distributed according to a density of about 20 to 30 per cm² in the form of a regular screen.

6. A support according to any one of claims 1 to 5, wherein it includes a non-perforated peripheral frame .

7. A support according to any one of claims 1 to 6, wherein it is formed of a sheet whose recto is intended to receive the display by means of reproduction or printing and whose verso is covered with a coloured flat tint for absorbing the light.

8. A support according to claim 7, wherein the flat tint is black.

9. A one- face transparent paper obtained by printing or reproduction on the support according to any one of claims 1 to 8.

DATED this 10th day of June 1998

PIERRE GAUTRENEAU

WATERMARK PATENT AND TRADEMARK ATTORNEYS
2ND FLOOR "THE GLASSHOUSE"
290 BURWOOD ROAD
HAWTHORN VIC 3122
AUSTRALIA



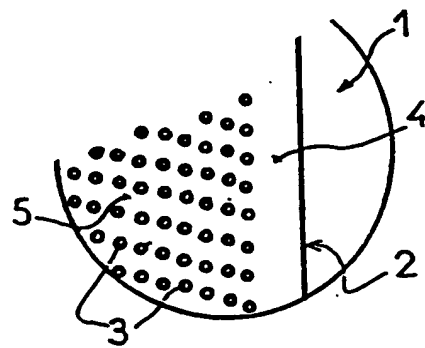


fig. 2

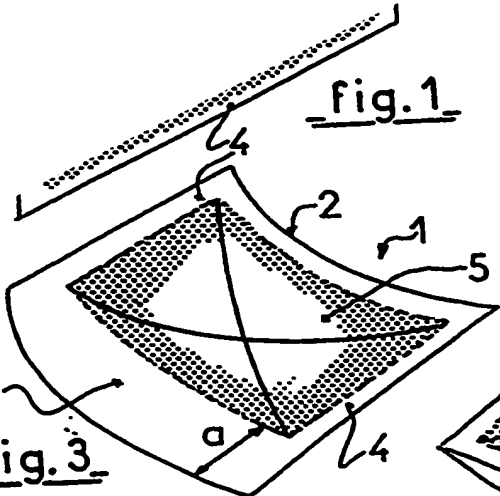


fig. 3

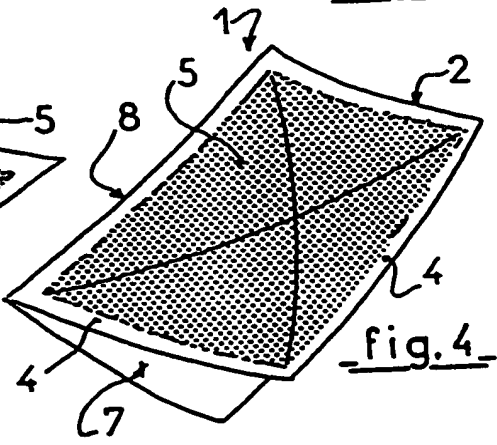


fig. 4

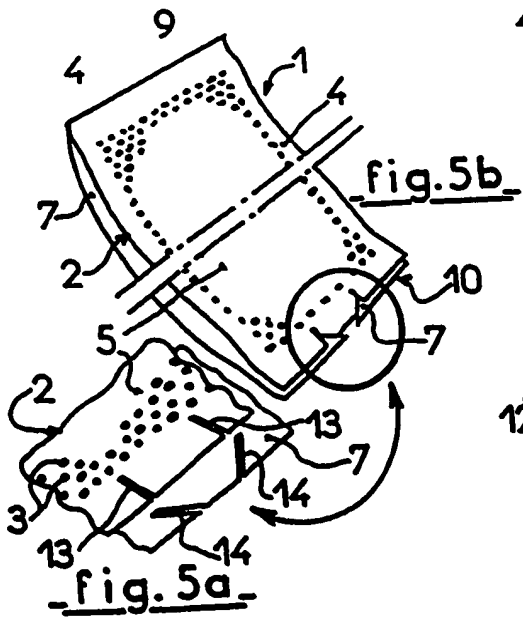


fig. 5b

fig. 5a

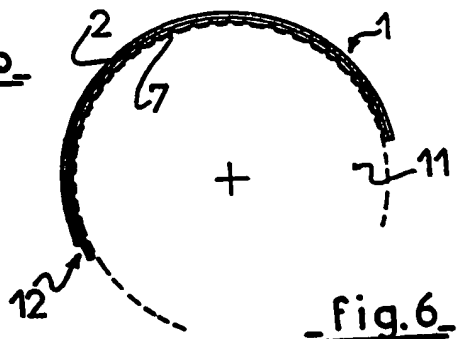


fig. 6

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FR 94/00054

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B42D15/00 G09F15/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B42D G09F B41F A47H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR,A,2 525 370 (LE DOUCE RENAUD) 21 October 1983 see the whole document ---	1,3
Y	DE,A,28 38 028 (KLEIBER & CO) 13 March 1980 see the whole document ---	1,3
A	DE,B,10 27 382 (ODO STEPHAN HAJEK) 3 April 1958 see the whole document ---	1
A	GB,A,2 088 613 (CHRISTOPHER JOHN COOK) 9 June 1982 see the whole document -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

a document member of the same patent family

Date of the actual completion of the international search

26 September 1994

Date of mailing of the international search report

07.10.94

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 631 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Loncke, J

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No
PCT/FR 94/00054

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR-A-2525370	21-10-83	NONE	
DE-A-2838028	13-03-80	NONE	
DE-B-1027382		NONE	
GB-A-2088613	09-06-82	NONE	